UVIC Universitat de Vic
Escola Politècnica Superior

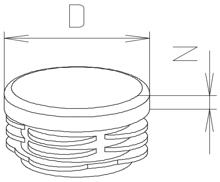
ANEXOS

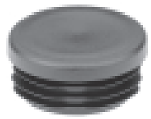
Manipulador robótico con visión artificial (CableBot)

Alberto López Germán

Grado en Ingeniería Electrónica Industrial y Automática
Tutor: Pere Martí Puig
Vic, Septiembre de 2014

Rundrohr-Verschlussstopfen
Round tube stopper





Polyäthylen schwarz black polyethylene

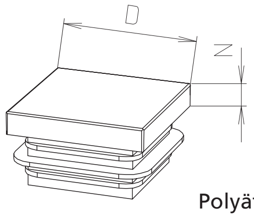
Code-No.	Type	Ø D	N
9.0301	18x1,5	18	5
9.0302	20x2	20	5
9.0303	25x2	25	5
9.0304	30x2	30	5
9.0305	32x3	30	5
9.0312	35x3	35	5
9.0306	40x3	40	5
9.0307	40x4	40	5
9.0308	45x4	45	5
9.0309	48x4	48	5
9.0310	50x4	50	5
9.0311	60x5	60	5
9.0313	50x3	50	5

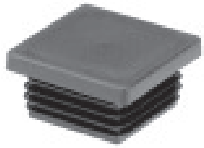


Aluminium

Code-No.	Type	Ø D	N
9.0331	50x4	50	6
9.0332	60x5	60	6

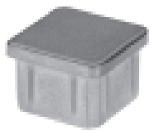
Vierkantrohr-Verschlussstopfen
Square tube stopper





Polyäthylen schwarz black polyethylene

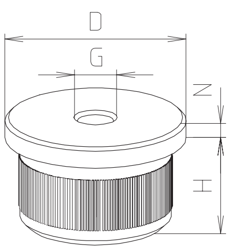
Code-No.	Type	☐ D	N
9.0401	25x1,5	25x25	5
9.0402	30x2	30x30	5
9.0403	35x2,5	35x35	5
9.0404	40x3	40x40	5
9.0408	40x4	40x40	5
9.0405	50x3	50x50	5
9.0406	60x4	60x60	5
9.0407	80x5	80x80	5



Aluminium

Code-No.	Type	☐ D	N
9.0411	50x3	50x50	6
9.0412	60x4	60x60	6

Rundrohr-Gewindestopfen
Round tube threaded stoppers

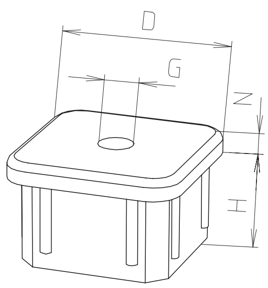


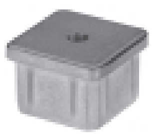


Aluminium

Code-No.	Type	D	G	H	N
9.0321	50x4	50	M10	25	6
9.0322	50x4	50	M16	25	6
9.0323	60x5	60	M10	30	6
9.0324	60x5	60	M16	30	6

Vierkantrohr-Gewindestopfen
Square tube threaded stoppers





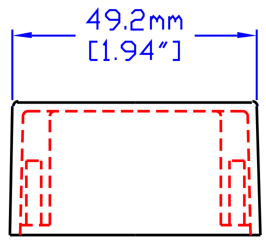
Aluminium

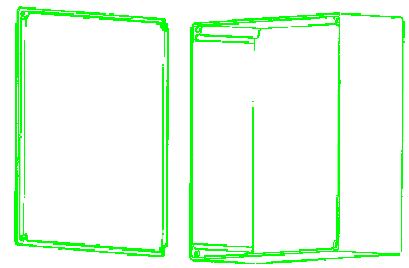
Code-No.	Type	D	G	H	N
9.0421	50x3	50x50	M10	25	6
9.0422	50x3	50x50	M16	25	6
9.0423	60x4	60x60	M10	30	6
9.0424	60x4	60x60	M16	30	6
9.0427	60x4	60x60	M10	25	8
9.0425	60x4	60x60	M16	25	8
9.0426	60x4	60x60	M20	25	8

NOTES
MATERIAL: -DIECAST ALUMINUM ALLOY. -FOUR 6-32 Phillips screws

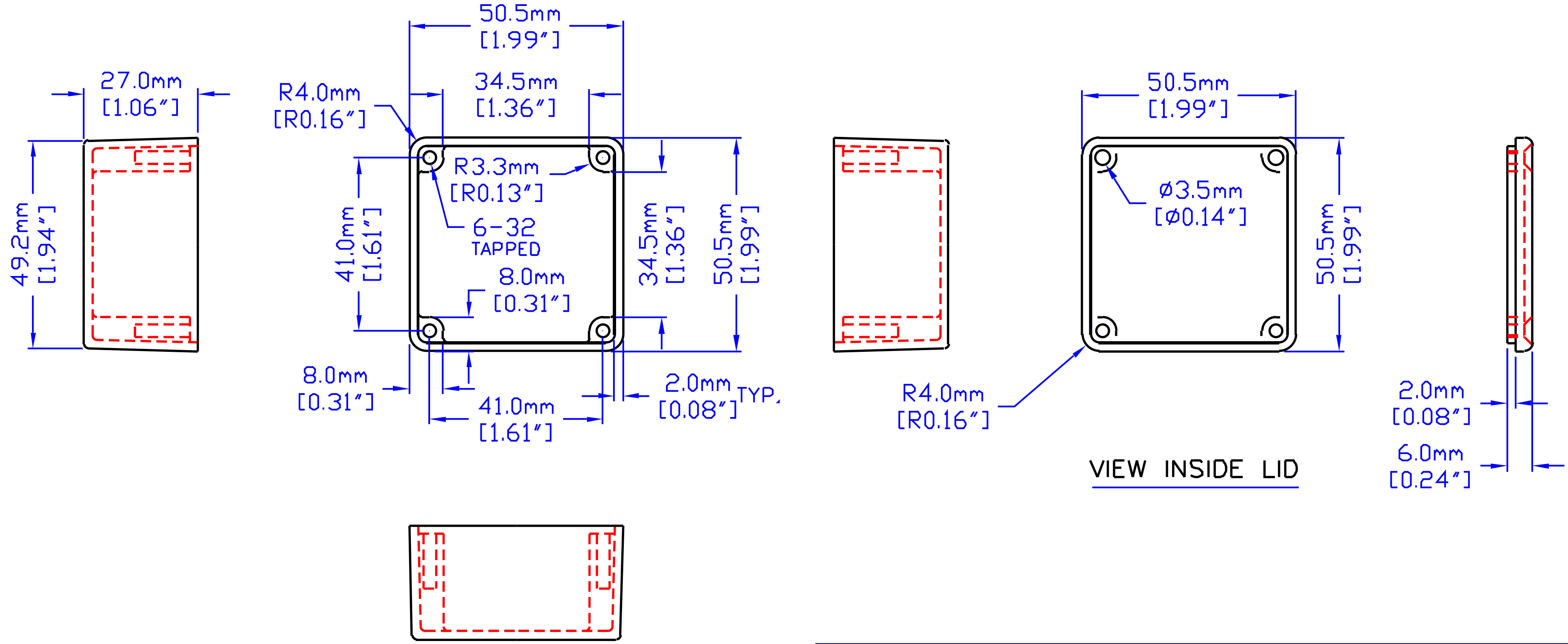
WATERPROOFING KIT AVAILABLE
PART # 1590LBG
THE GASKET KIT WILL AFFORD PROTECTION AGAINST LIQUID TO NEMA 4 AND IP65 LEVELS.

THIS ENCLOSURE IS ALSO AVAILABLE IN BLACK AND GRAY TEXTURE FINISH.





3D VIEW
(NOT TO SCALE)



VIEW OF BOX (LID REMOVED)

HAMMOND MANUFACTURING

1590LB

CANADA - PH (519) 886 7170 - FAX (519) 886 8311
U.S.A. - PH (716) 631 5700 - FAX (716) 631 1156

FIBOX MNX **PCM 200/150 T**

FIBOX



Sample photo

Order symbol: PCM 200/150 T
Product nbr: 6016929

Description: Enclosure, PC
Remarks: Smoked transparent cover

EAN:	6418074038333
El. number:	
Finland	3421678
Denmark	8212027394
Italy	7342080
Sweden	2535451

Including: Base with metric knock-outs and TPE gasket and screws for mounting plate/DIN-rail, cover with polyamide cover screws and wing heads for cover screws.

Dimensions:	L	W	H
mm:	255	180	150
inch:	10	7.1	5.9

Materials:	
Material:	PC
Base colour:	RAL 7035
Cover colour:	Smoked grey
Cover screws material:	Polyamide
Cover screws colour:	Black
Gasket material:	TPE

Temperatures:	
Short term:	-40 … 120 °C
Continuous:	-40 … 80 °C
Short term:	-40 … 250 °F
Continuous:	-40 … 175 °F

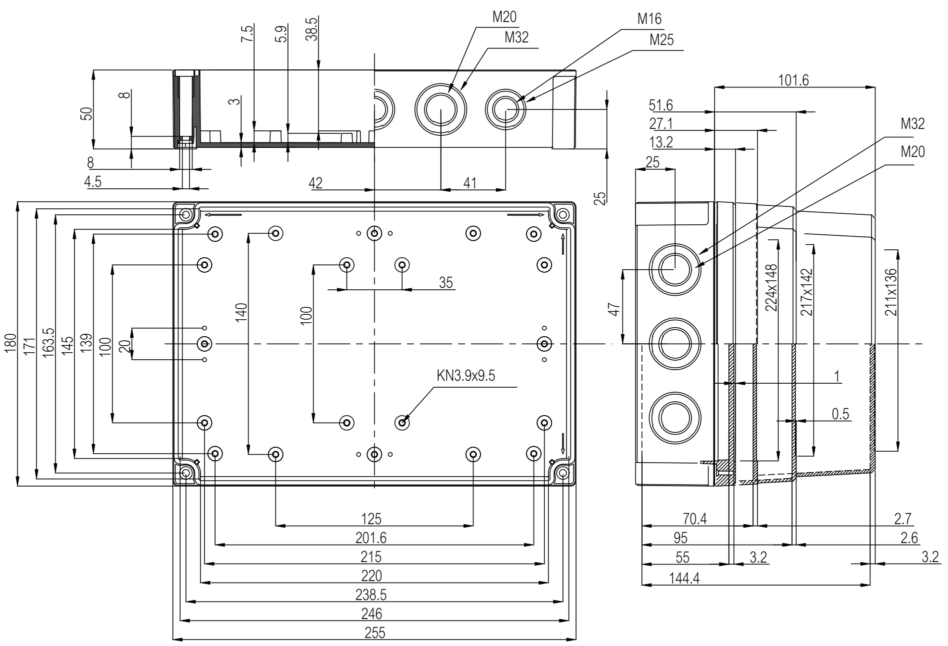
Accessories:	
MIV 200	Mounting plate
MIN 15	DIN-15 Mounting rail
MIN 20	DIN-15 Mounting rail
MIV 15	DIN-35 Mounting rail
MIV 20	DIN-35 Mounting rail
FP A 200/180	Front plate
HFP 180	Front plate hinge series

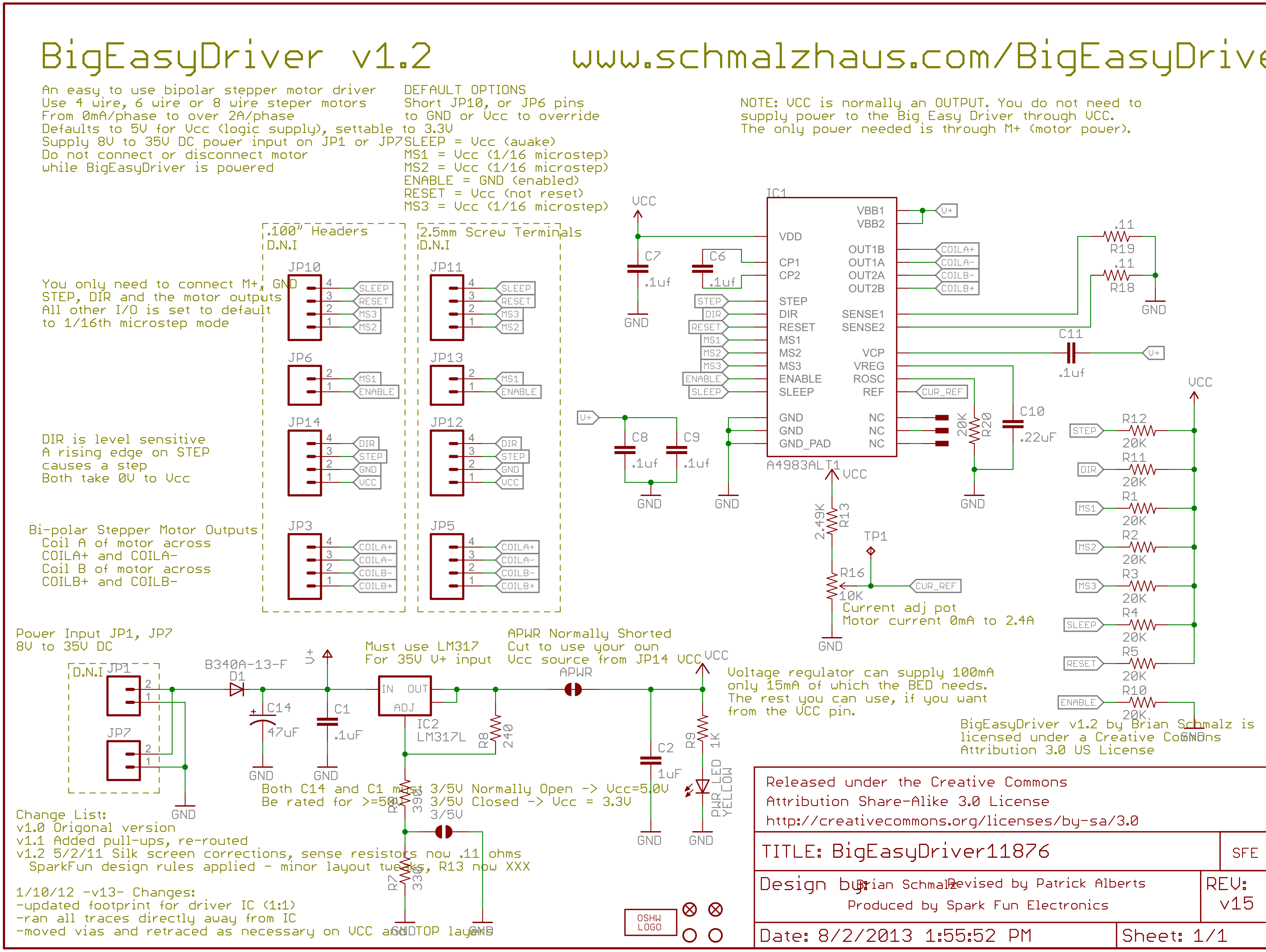
Rating:

Ingress Protection (EN 60529): IP 66/67
Impact Resistance (EN 50102): IK 08
Electrical insulation: Totally insulated
Halogen free (DIN/VDE 0472, Part 815): Yes
UV resistance: UL 508
Flammability Rating (UL 746 C 5): UL 94 5V
Glow Wire Test (IEC 695-2-1) °C: 960
NEMA Class: NEMA 1, 4, 4X, 6, 12, 13

Certificates:

Germanischer Lloyd (GL)
Underwriters Laboratories
Det Norske Veritas
Fimko
Europe EN 50298 1998
UL Canada
Gost R




BigEasyDriver v1.2
www.schmalzhaus.com/BigEasyDriver
An easy to use bipolar stepper motor driver
Use 4 wire, 6 wire or 8 wire steper motors
From 0mA/phase to over 2A/phase
Defaults to 5V for Vcc (logic supply), settable to 3.3V
Supply 8V to 35V DC power input on JP1 or JP7
Do not connect or disconnect motor
while BigEasyDriver is powered
DEFAULT OPTIONS
Short JP10, or JP6 pins
to GND or Vcc to override
SLEEP = Vcc (awake)
MS1 = Vcc (1/16 microstep)
MS2 = Vcc (1/16 microstep)
ENABLE = GND (enabled)
RESET = Vcc (not reset)
MS3 = Vcc (1/16 microstep)
NOTE: VCC is normally an OUTPUT. You do not need to
supply power to the Big Easy Driver through VCC.
The only power needed is through M+ (motor power).
.100" Headers
D.N.I
2.5mm Screw Terminals
D.N.I
You only need to connect M+, GND
STEP, DIR and the motor outputs
All other I/O is set to default
to 1/16th microstep mode
DIR is level sensitive
A rising edge on STEP
causes a step
Both take 0V to Vcc
Bi-polar Stepper Motor Outputs
Coil A of motor across
COILA+ and COILA-
Coil B of motor across
COILB+ and COILB-
JP10
JP11
JP6
JP13
JP14
JP12
JP3
JP5
IC1
A4983ALT1
VDD
CP1
CP2
STEP
DIR
RESET
MS1
MS2
MS3
ENABLE
SLEEP
GND
GND_PAD
VBB1
VBB2
OUT1B
OUT1A
OUT2A
OUT2B
SENSE1
SENSE2
VCP
VREG
ROSC
REF
NC
COILA+
COILA-
COILB-
COILB+
CUR_REF
V+
VCC
GND
C7 .1uf
C6 .1uf
C8 .1uf
C9 .1uf
C11 .1uf
C10 .22uF
R19 .11
R18 .11
R20 20K
R13 2.49K
TP1
R16 10K
Current adj pot
Motor current 0mA to 2.4A
R12 20K
R11 20K
R1 20K
R2 20K
R3 20K
R4 20K
R5 20K
R10 20K
Power Input JP1, JP7
8V to 35V DC
D.N.I
JP1
JP7
B340A-13-F
D1
C14 47uF
C1 .1uF
Must use LM317
For 35V V+ input
IN OUT ADJ
IC2
LM317L
R8 240
APWR Normally Shorted
Cut to use your own
Vcc source from JP14 VCC
APWR
C2 1uF
R9 1K
PWR_LED YELLOW
Voltage regulator can supply 100mA
only 15mA of which the BED needs.
The rest you can use, if you want
from the VCC pin.
Both C14 and C1 must
Be rated for >=50V
3/5V Normally Open -> Vcc=5.0V
3/5V Closed -> Vcc = 3.3V
3/5V
R6 390
R7 330
BigEasyDriver v1.2 by Brian Schmalz is
licensed under a Creative Commons
Attribution 3.0 US License
Change List:
v1.0 Origonal version
v1.1 Added pull-ups, re-routed
v1.2 5/2/11 Silk screen corrections, sense resistors now .11 ohms
SparkFun design rules applied - minor layout tweaks, R13 now XXX
1/10/12 -v13- Changes:
-updated footprint for driver IC (1:1)
-ran all traces directly away from IC
-moved vias and retraced as necessary on VCC and TOP layers
OSHW LOGO
Released under the Creative Commons
Attribution Share-Alike 3.0 License
http://creativecommons.org/licenses/by-sa/3.0
TITLE: BigEasyDriver11876
SFE
Design by: Brian Schmalz Revised by Patrick Alberts
Produced by Spark Fun Electronics
REV: v15
Date: 8/2/2013 1:55:52 PM
Sheet: 1/1

增量型旋转编码器

增量型　外径Φ25 型号：A6A2
INCREMENTAL ROTARY ENCODERS,OUTSIDE DIAM Φ25 MODEL：A6A2
替代型号SUBSTITUTE：E6A2

型号 小型编码器MINITYPE ENCODERS

A6A2 - CWZ 6C

- A6A2：设计型号 Sequence Number；外径Φ25 outsidediam diam Φ25
- B：PNP开路输出PNP open collector Output
- C：NPN开路输出Open collector NPN output
- E：电压（NPN）输出Voltage output
- Gh：互补输出 NPN Push Pull output
- EH：电压（PNP）输出PNP Voltage output
- 1：DC5V
- 3：DC5～12V
- 5：DC12～24V
- 6：DC5～24V
- Z：带复位相输出 + Zero Signal
- S:单相输出 singleness Output "A"
- W:多相输出 AB90° Phase Difference
- •绝对式编码器 •
- •增量式编码器 •



■种类Ordering Information

◆本体ABSOLUTE ROTARY ENCODERS

输出相 Output Mode	电源电压 Supply Voltage	输出状态 Output Configuration	替代型号 Substitute	分辨率（脉冲/旋转） Resolution(p/r)
A相	DC 5~12V	电压输出 Voltage output	型号A6A2-CS3E	10 60 100 200 300 360 500
		NPN开路集电极输出 Open collector NPN output	型号A6A2-CS3C	10 60 100 200 300 360 500
	DC12~24V		型号A6A2-CS5C	10 60 100 200 300 360 500
A相、B相	DC 5~12V	电压输出 Voltage output	◎型号A6A2-CW3E	100 200 360 500
		NPN开路集电极输出 Open collector NPN output	◎型号A6A2-CW3C	100 200 360 500
	DC12~24V		◎型号A6A2-CW5C	100 200 360 500
A相、B相 Z相	DC 5~12V	电压输出 Voltage output	◎型号A6A2-CWZ3E	100 200 360 500
		NPN开路集电极输出 Open collector NPN output	◎型号A6A2-CWZ3C	100 200 360 500
	DC12~24V		◎型号A6A2-CWZ5C	100 200 360 500

注：订购时，除型号之外，还一定要指定"分辨率"。
分辨率为标准在库，无记号的为接收订货生产。

- ●适应定位的需要。
  带原点输出(Z相)型出现在生产线上。
- ●也实现了更高精度的测长等。
- ●追加了外径Φ25，分辨率500P/R的系列。

YUMO

旋转编码器 ROTARY ENCODERS

增量型旋转编码器

增量型 外径ф25 型号：A6A2
INCREMENTAL ROTARY ENCODERS,OUTSIDE DIAM ф25 MODEL：A6A2
替代型号SUBSTITUTE：E6A2

外径：ф25 型号：A6A2 替代型号：E6A2

Miniature Rotary Encoder for
Positioning in Space-Confined Areas

- Wide variety of supply voltages and output forms to match input devices
- Models with zero index function ideal for positioning applications
- High resolution models (300 or 360 pulses per revolution) substantially improve measuring accuracy
- High response frequency and noise immunity make encoders ideal for factory automation applications



■额定/性能SPECIFICATIONS

型号MODEL 项目ITEM	型号A6A2-CS3E	型号A6A2-CS3C	型号A6A2-CS5C	型号A6A2-CW3E	型号A6A2-CW3C	型号A6A2-CW5C	型号A6A2-CWZ3E	型号A6A2-CWZ3C	型号A6A2-CWZ5C
电源电压 Powersupplyvoltage	DC5V-5%~ 12V+10% 脉动(p-p)5%以下		DC12V-10% ~24V+15% 脉动(p-p)5%以下	DC5V-5%~ 12V+10% 脉动(p-p)5%以下		DC12V-10% ~24V+15% 脉动(p-p)5%以下	DC5V-5%~ 12V+10% 脉动(p-p)5%以下		DC12V-10% ~24V+15% 脉动(p-p)5%以下
消耗电流 Currentconsumption	30mA以下max	20mA以下max		30mA以下max	20mA以下max		50mA以下max	30mA以下max	
分辨率(脉冲/旋转) Resolution (See Note 1)	10、20、60、100、200、300、360、500				10、200、360、500				
输出相 Output phases	A相			A相、B相			A相、B相、Z相		
输出状态 Output form	电压输出 Voltage output	开路集电极输出 Open collector output		电压输出 Voltage output	开路集电极输出 Open collector output		电压输出 Voltage output	开路集电极输出 Open collector output	
输出容量 Output capacity	输出电阻：2kΩ Output resistance: 2 kΩ 输出电流：20mA以下 Sink current: 20 mA max 残留电压：0.4V以下 Residual voltage: 0.4 V max (输出电流)20mA时	外加电压：DC30V以下 Applied voltage: 30 VDC max 同步电流：30mA以下 Sink current: 30 mA max 残留电压：0.4V以下 (同步电流30mA以下) Residual voltage: 0.4 V max		输出电阻：2kΩ Output resistance: 2 kΩ 输出电流：20mA以下 Sink current: 20 mA max 残留电压：0.4V以下 Residual voltage: 0.4 V max (输出电流)20mA时	外加电压：DC30V以下 Applied voltage: 30 VDC max 同步电流：30mA以下 Sink current: 30 mA max 残留电压：0.4V以下 (同步电流30mA以下) Residual voltage: 0.4 V max		输出电阻：2kΩ Output resistance: 2 kΩ 输出电流：20mA以下 Sink current: 20 mA max 残留电压：0.4V以下 Residual voltage: 0.4 V max (输出电流)20mA时	外加电压：DC30V以下 Applied voltage: 30 VDC max 同步电流：30mA以下 Sink current: 30 mA max 残留电压：0.4V以下 (同步电流30mA以下) Residual voltage: 0.4 V max	
最高应答频率 Maximum response frequency	30kHz								
输出相位差 Phase difference of output	A相、B相差 90° ±45°								
输出占空比 output wavefrom percentage	50±25%								
输出上升、下降时间 Output rise and fall times	1.0μs以下max 导线cable 500mm, 同步电流10mA (at sink current of 10 mA with 2 m cable)	1.0 μs以下，导线长500mm，控制输出电压5V，负荷电阻1KΩ 1.0 μs max. (at control output voltage of 5 V and load resistance of 1 kΩ with 2 m cable)		1.0μs以下max 导线cable 500mm, 同步电流10mA (at sink current of 10 mA with 2 m cable)	1.0 μs以下，导线长500mm，控制输出电压5V，负荷电阻1KΩ 1.0 μs max. (at control output voltage of 5 V and load resistance of 1 kΩ with 2 m cable)		1.0μs以下max 导线cable 500mm, 同步电流10mA (at sink current of 10 mA with 2 m cable)	1.0 μs以下，导线长500mm，控制输出电压5V，负荷电阻1KΩ 1.0 μs max. (at control output voltage of 5 V and load resistance of 1 kΩ with 2 m cable)	

*1.电的最高应答转速由分辨率以及最高应答频率决定。

$$电的最高应答频率转速(r/min)=\frac{最高响应频率}{分辨率}\times 60$$

因此，如果旋转超过最高响应转速，则电气上无法追踪信号。

*2.对水、油没有保护作用。

*3.接通电源时，会流过约9A的冲流。(时间约0.3ms)

Note:

- The maximum electrical response revolution is determined by the resolution and maximum response frequency as follows:
- Maximum electrical response frequency (rpm) = Maximum response frequency ÷ resolution x 60
- This means that the A6B2 encoder will not operate electrically if its shaft speed exceeds the maximum electrical response revolution.

增量型旋转编码器

增量型 外径Φ25 型号：A6A2
INCREMENTAL ROTARY ENCODERS,OUTSIDE DIAM Φ25 MODEL：A6A2
替代型号SUBSTITUTE：E6A2

外径：Φ25 型号：A6A2 替代型号：E6A2

■额定/性能SPECIFICATIONS

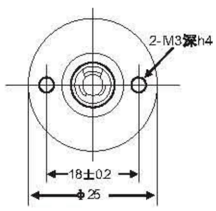
机械性能 参数 Mechanical Spec		
起动转矩 Startion Torque		1mN・m以下max
惯性力矩Moment of Inertia		1×10^{-7} kg・m^2以下max
允许容力 Shaft loading	倾向Radial	10N
	推力Thrust	5N
允许安装精度 Mounting Tolerance		侧面误差 Raclial:0.03mm TIR Max; 正向误差 Axial: 0.2mm Max; 角度误差Shaft Runout: 0.1°Max
轴最大负荷 Allowable Shaft Load		径向Radial：5N, 轴向 Axial：3N
允许最高转速Maxirnun Rotating Speed		5000rpm
环境温度 Operating Temp Range		工作时:-10 ~ +55℃ 保存时： -25 ~ +80℃ (不结冰)
环境湿度Humidity		工作时、保存时：各35 ~ 85%RH(不结露)
绝缘电阻 Insulation resistance		20MΩ以上(DC500V摇表)充电部整体与外壳间
耐电压 Dielectric strength		AC500V 50/50Hx 1min 充电部整体与外壳间 充电部整体与外壳间
振动(耐久)Vibration resistance		10~55Hz 上下振幅1.5mm X、Y、Z各方向
冲击(耐久)Shock resistance		500m/s2 X、Y、Z各方向 3次
保护结构 Degree of protection		IEC规格 Ip50
连接方式 Connection		导线引出型(标准导线长cable length：500mm)
质量 Weight		约60g
附件 Accessories		耦合器、伺服装置用安装配件(附于型号E6A2-CW2□)、六角扳手，使用说明书

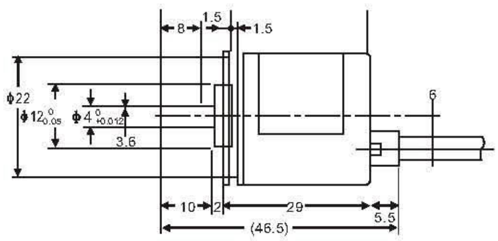
■ 外形尺寸Dimensions (单位Unit：mm)

◆ 本体

型号model:A6A2







*PVC绝缘圆形导线Φ4.5芯(导体截面积：0.15mm²、绝缘体直径：Φ0.9mm)标准500mm长

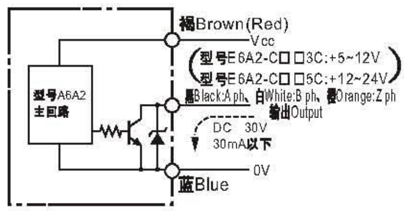
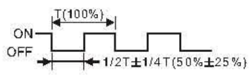
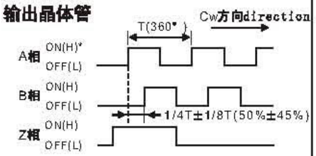
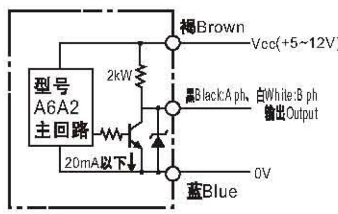
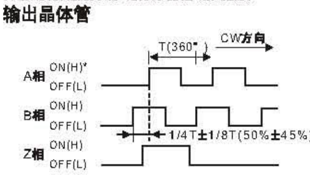
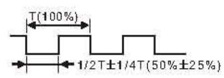
Output cable (shielded) O.D.: 4 dia.
Standard length: 50 cm (1.64 ft

增量型旋转编码器

增量型　外径φ25 型号：A6A2
INCREMENTAL ROTARY ENCODERS,OUTSIDE DIAM φ25 MODEL：A6A2
替代型号SUBSTITUTE：E6A2

外径：φ25　型号：A6A2　替代型号：E6A2

■输出段回路图OUTPUT CIRCUIT DIAGRAMS

型号 MODEL	输出回路 Output diagram	输出方式 Outputwave	连接 Wire Code Code
型号A6A2-CS3C 型号A6A2-CS5C		输出晶体管Output transistor 	see wire color table
型号A6A2-CW3C 型号A6A2-CW5C		旋转方向：CW Direction of rotation: CW (从轴方向观察为右转) Clockwise as viewed from the shaft 输出晶体管 	
型号A6A2-CWZ3C 型号A6A2-CWZ5C			
型号A6A2-CW3E		旋转方向：CCW Direction of rotation: CCW (从轴方向观察为右转) Counterclockwise as viewed from the shaft 输出晶体管 	
型号A6A2-CWZ3E			
型号A6A2-CS3E		输出晶体管 	

线色Wire color	内容Signal
褐Brown	+VCC
黑 Black	A相ph
白White	B相ph
橙Orange	Z相ph
蓝Blue	0V

注：1.单型(型号A6A2-CS□□)中，白和橙色无输出。(未连接)
2.换向型(型号A6A2-CW□□)中，橙色无输出。(未连接)
3.电压输出型中，可吸收20mA的电流。

注1* (H)(L)表示电压输出型的状态。
2.顺时针(CW)旋转时，A相比B相，超前1/4T±18T相位。而逆时针(CCW)旋转时，A相比B相滞后1/4T±18T相位。

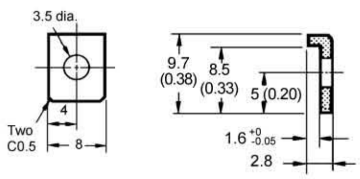
Note:
1. The white (green) and orange (yellow) lines of the single type (E6A2-CS) do not output signals (no connection).
2. The orange (yellow) line of the reversible type (E6A2-CW) does not output signal (no connection).
3. The voltage output type is capable of sinking a maximum of 20 mA.

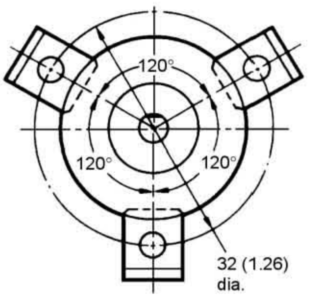
Note:
1. *(H) and (L) indicate the output levels of the voltage output type.
2. Output A leads B by 1/4T ±1/8T when the shaft revolves clockwise. Output Alags behind B by 1/4T ±1/8T when the shaft revolves counterclockwise.

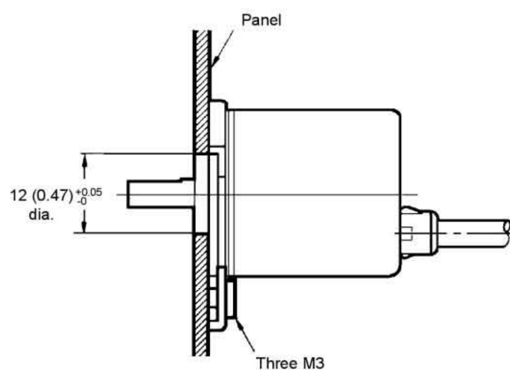
■ 安装尺寸 Installation Dimension　(单位Unit：mm)

Dimensions with Encoder

Mounting Bracket E69-1
supplied with A6A2-CWZ encoders

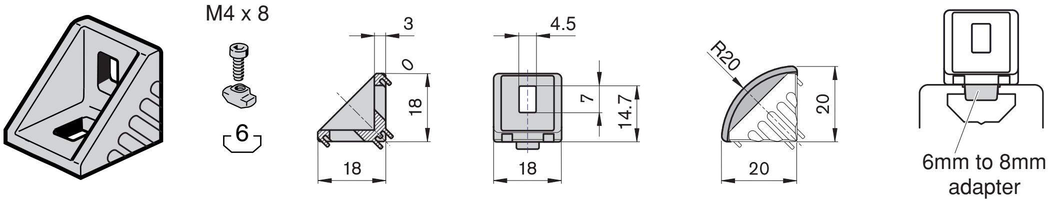






20x20 Gusset

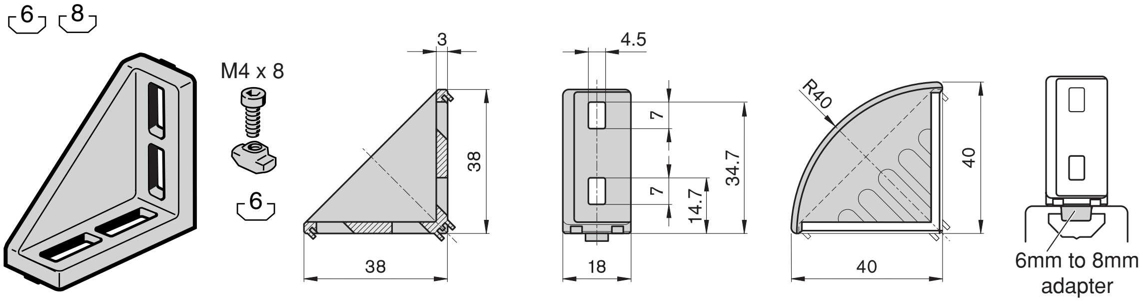
6 8



Description	Qty	Part Number
20x20 gusset only	1	**3 842 523 508**
6 20x20 gusset with fasteners	1	**3 842 523 511**
20x20 round cover cap	1	**3 842 523 513**
Plastic adapter 6→8	1	**3 842 523 516**

20x40 Gusset

6 8



Description	Qty	Part Number
20x40 gusset only	1	**3 842 523 517**
6 20x40 gusset with fasteners	1	**3 842 523 520**
20x40 round cover cap	1	**3 842 523 522**
Plastic adapter 6→8	1	**3 842 523 516**

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Foco Antorcha Luz 76 LED 2.9W Difusor Filtro para Cámara Videocámara DSLR








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++ Descripción ++

Características:
1. Diseño fino, volumen pequeño, peso ligero y portátil.
2. Adopta la tecnología LED y diseño de circuito de corriente constante para garantiza la luz de salida unánime, constante y precisa.
3. Proporciona fuente de luz perfecta con eficacia.

Nombre: NG Foco de Cámara
Modelo: CN-76
Color: negro
Tamaño: cerca de 109 x 107 x 52 mm
Tamaño del embalaje externo: unos 120 x 66 x 127 mm
Parámetros del equipo:
Energía: 2.9W
Voltaje de funcionamiento: 6V
Temperatura de color: 5400K-3200K
76 x Diodos Emisores de Luz
Modelo de la batería: 4 x 1,5 V pilas AA (baterías no incluidas)
Accesorios: 1 x LED luz de cámara, 1 x Difusor Filtro, 2 x Filtro de color, 1 x manual de usuario en inglés
Nota: Cuando no utiliza el producto, por favor, saque las pilas antes de guardarlo. Cuando la luz se debilita, por favor, cambie la batería a tiempo.

Paquete contiene

1 x foco para cámara
1 x difusor filtro
2 x filtro de color

1 x manual en inglés
En paquete original

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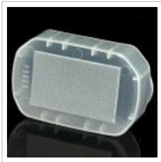
Base Pie Soporte de Flash Zapata para
2,09 EUR
Envío gratis



Mando Disparador Intervalometro Aputure
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Envío gratis



Soporte Paraguas Flash giro 360 Grado
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Difusor de Flash Caja Blanco para Cámara
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Lente Protección Cubierta Silicona
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1/4" Tornillo Screw Adaptador Cámara pa
1,89 EUR
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Preguntas y respuestas sobre este artículo

No se ha publicado ninguna pregunta ni respuesta sobre este artículo.

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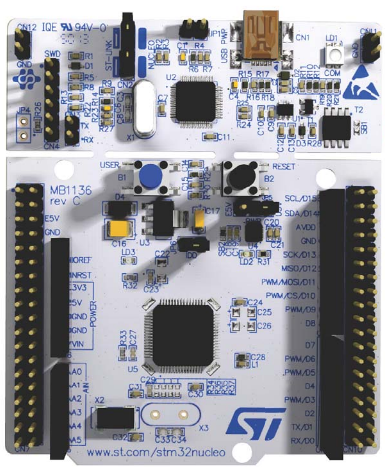
Cabe en un bolso y hasta en algunos bolsillos: con su diseño plegable, esta cámara Web se puede llevar a todas partes.



NUCLEO-XXXXRX

STM32 Nucleo boards

Data brief



Features

- STM32 microcontroller with LQFP64 package
- Two types of extension resources
  - Arduino Uno Revision 3 connectivity
  - STMicroelectronics Morpho extension pin headers for full access to all STM32 I/Os
- mbed-enabled (*mbed.org*)
- On-board ST-LINK/V2-1 debugger/programmer with SWD connector
  - selection-mode switch to use the kit as a standalone ST-LINK/V2-1
- Flexible board power supply
  - USB VBUS or external source (3.3 V, 5 V, 7 - 12 V)
  - Power management access point
- Three LEDs
  - USB communication (LD1), user LED (LD2), power LED (LD3)
- Two push buttons: USER and RESET
- USB re-enumeration capability: three different interfaces supported on USB
  - Virtual Com port
  - Mass storage
  - Debug port
- Comprehensive free software HAL library including a variety of software examples
- Supported by wide choice of Integrated Development Environments (IDEs) including IAR, Keil, GCC-based IDEs

Description

The STM32 Nucleo board provides an affordable and flexible way for users to try out new ideas and build prototypes with any STM32 microcontroller line, choosing from the various combinations of performance, power consumption and features. The Arduino™ connectivity support and ST Morpho headers make it easy to expand the functionality of the STM32 Nucleo open development platform with a wide choice of specialized shields.
The STM32 Nucleo board does not require any separate probe as it integrates the ST-LINK/V2-1 debugger/programmer.
The STM32 Nucleo board comes with the STM32 comprehensive software HAL library together with various packaged software examples, as well as direct access to mbed online resources.

Table 1. Device summary

Reference	Part number
NUCLEO-XXXXRX	NUCLEO-F030R8, NUCLEO-F072RB NUCLEO-F103RB NUCLEO-F302R8 NUCLEO-F334R8 NUCLEO-F401RE, NUCLEO-F411RE NUCLEO-L053R8, NUCLEO-L152RE

1 Ordering information

Table 2 lists the order codes and the respective targeted MCU.

Table 2. Ordering information

Order code	Targeted MCU
NUCLEO-F030R8	STM32F030R8T6
NUCLEO-F072RB	STM32F072RBT6
NUCLEO-F103RB	STM32F103RBT6
NUCLEO-F302R8	STM32F302R8T6
NUCLEO-F334R8	STM32F334R8T6
NUCLEO-F401RE	STM32F401RET6
NUCLEO-F411RE	STM32F411RET6
NUCLEO-L053R8	STM32L053R8T6
NUCLEO-L152RE	STM32L152RET6

The meaning of NUCLEO-TXXXRY codification is as follows:

- TXXX describes the STM32 MCU product line
- R describes the pin count (R for 64 pins)
- Y describes the code size (8 for 64K, B for 128K, E for 512K)

The order code is printed on a sticker placed at the top or bottom side of the board.

2 Revision history

Table 3. Document revision history

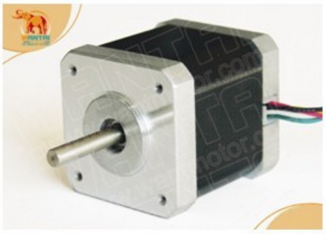
Date	Revision	Changes
10-Feb-2014	1	Initial release.
13-Feb-2014	2	Added *Table 1: Device summary* and updated *Table 2: Ordering information*.
11-Apr-2014	3	Extended the applicability to NUCLEO-F302R8. Updated *Table 1: Device summary* and *Table 2: Ordering information*.
26-May-2014	4	Extended the applicability to NUCLEO-L053R8, NUCLEO-F072RB, NUCLEO-F334R8 and NUCLEO-F411RE Updated *Table 1* and *Table 2*.

Hybrid Stepping Motor 42BYGHM

Product No.: N2007824174323

General Specifications

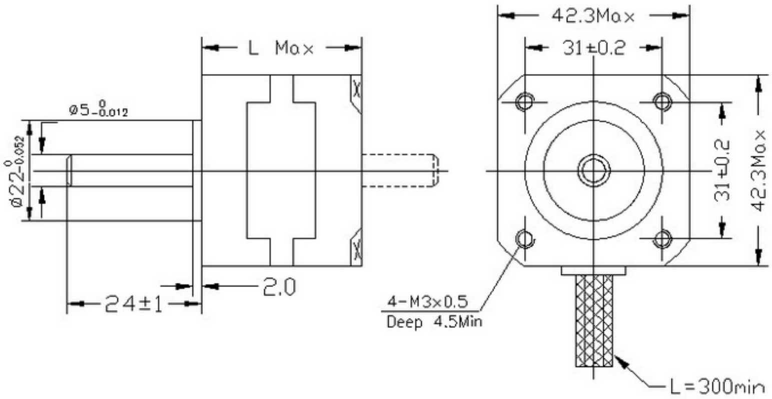
Step Accuracy-----------------------------------±5%
Temperature Rise------------------------------80℃ Max
Ambient Temperature Range ------------ -20°~+50°
Insulation Resistance----------------------- 100MΩ Min 500VDC
Dielectric Strength-------------------------- 500VAC 1 Minute



Electrical Specifications

42BYGHM 809	0.9	48	2.8	1.7	1.65	4	4200	4	68	220	0.34

Mechanical Dimensions(外型图)



Wiring diagram (接线图):



Product Specification

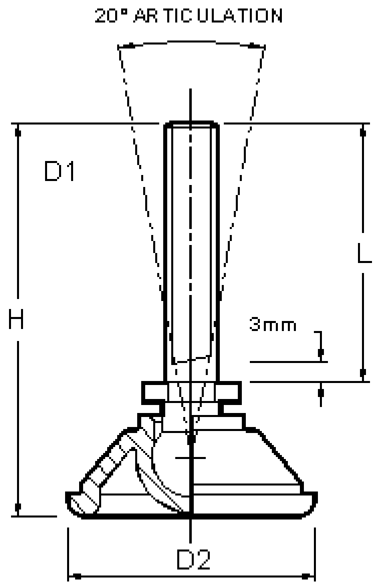
A040/ ... Plastic Base / Mild Steel Plated Stud
Levelling Foot Range



Materials ... **Base -** Polyamide Reinforced Nylon
Stud - Mild Steel, Plated

Part No.	Thread Size D1 (mm)	Thread Length L (mm)	Base Diameter D2 (mm)	Overall Height H (mm)	Max Load (kg)
A040 / 001	M6	20	40	41	300
A040 / 009	M6	20	50	43	300
A040 / 002	M6	40	40	61	300
A040 / 010	M6	40	50	63	300
A040 / 003	M8	25	40	46	450
A040 / 011	M8	25	50	48	450
A040 / 004	M8	40	40	61	450
A040 / 012	M8	40	50	63	450
A040 / 005	M8	60	40	81	450
A040 / 013	M8	60	50	83	450
A040 / 006	M10	38	40	59	500
A040 / 014	M10	38	50	61	500
A040 / 017	M10	60	40	81	500
A040 / 015	M10	60	50	83	500
A040 / 008	M10	75	40	96	500
A040 / 016	M10	75	50	98	500
A040 / 021	M12	50	40	76	600
A040 / 017	M12	50	50	75	600
A040 / 022	M12	75	40	98	600
A040 / 018	M12	75	50	100	600
A040 / 023	M12	100	40	123	600
A040 / 019	M12	100	50	125	600
A040 / 024	M12	125	40	148	600
A040 / 020	M12	125	50	150	600

Dimensions are approximate



Registered Design

Profile 8 40x40 light

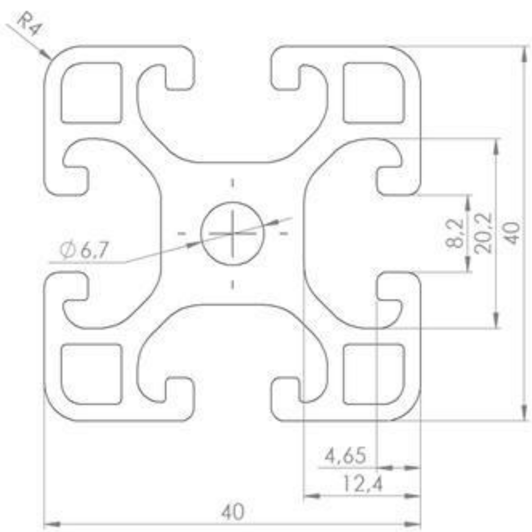
RS Article no.: 7613319, 7613313 & 7613322

Profile:	**40mm x 40mm**
Groove size:	**8mm**
Profile Length:	**1000mm, 2000mm & 3000mm**
No. of grooves:	**4**
Material:	**Anodized Aluminium**

item number	M ATP I8 4040L		
Moment of inertia	I_x	9.18	cm^4
	I_y	9.18	cm^4
Section modulus	W_x	4.59	cm^3
	W_y	4.59	cm^3
Mass	G	1.5	kg/m
Profile Surface	A	6.49	cm^2
Profile groove		8	mm
Length	L	6060	mm
Packing Unit	PU	16	pcs.

Technical data strut profiles	
EN AW - 6063	DIN EN 573
Tolerance	DIN EN 12020-2
Anodizing	E6EV1
Thickness	15µm







RS Article no.	40 Character Description	Profile Length
7613319	Profile 8 40x40 light 1m	1000mm
7613313	Profile 8 40x40 light 2m	2000mm
7613322	Profile 8 40x40 light 3m	3000mm

Product data sheet
Characteristics

ABL8REM24030
regulated SMPS - 1 or 2-phase - 100..240 V AC - 24 V - 3 A

Main

Range of product	Phaseo
Product or component type	Power supply
Power supply type	Regulated switch mode
Input voltage	100...240 V AC phase to phase, terminal(s): L1-L2 100...240 V AC single phase, terminal(s): N-L1 110...220 V DC
Output voltage	24 V DC
Rated power in W	72 W
Input protection type	Integrated fuse (not interchangeable)
Power supply output current	3 A
Output protection type	Against overload, protection technology: 1.1 x In Against overvoltage, protection technology: tripping if U > 1.5 x Un Against short-circuits, protection technology: automatic reset Against undervoltage, protection technology: tripping if U < 0.8 x Un
Ambient air temperature for operation	0...60 °C without derating

Complementary

Input voltage limits	100...250 V 85...264 V
Network frequency	47...63 Hz
Inrush current	<= 30 A
Cos phi	0.65
Efficiency	> 85 %
Output voltage limits	100...120 % adjustable
Power dissipation in W	12.7 W
Current consumption	0.83 A at 240 V 1.46 A at 100 V
Line and load regulation	+/- 3 %
Residual ripple	<= 200 mV
Holding time	>= 10 ms at 100 V >= 10 ms at 240 V
Connections - terminals	Screw type terminals for input connection, connection capacity: 2 x 0.14...2 x 2.5 mm²AWG gauge26...14 Screw type terminals for input ground connection, connection capacity: 1 x 0.14...1 x 2.5 mm²AWG gauge26...14 Screw type terminals for output connection, connection capacity: 2 x 0.14...2 x 2.5 mm²AWG gauge26...14 Screw type terminals for output ground connection, connection capacity: 1 x 0.14...1 x 2.5 mm²AWG gauge26...14
Marking	CE
Mounting support	35 x 15 mm symmetrical DIN rail 35 x 7.5 mm symmetrical DIN rail 75 x 7.5 mm symmetrical DIN rail
Operating position	Vertical
Output coupling	Parallel Series

Name of test	Conducted/Radiated emissions conforming to EN 55011 Conducted/Radiated emissions conforming to EN 55022 Class B Electrostatic discharges conforming to EN/IEC 61000-4-2 Emission conforming to EN 50081-1 Induced electromagnetic field conforming to EN/IEC 61000-4-6 Primary outage conforming to IEC 61000-4-11 Radiated electromagnetic field conforming to EN/IEC 61000-4-3 Rapid transient conforming to IEC 61000-4-4 Surge conforming to EN/IEC 61000-4-5
Status LED	1 LED green for output voltage 1 LED orange for input voltage
Product weight	0.52 kg

Environment

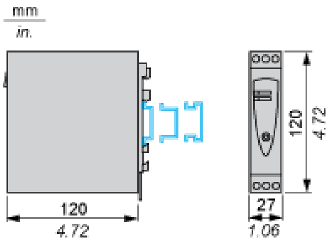
Product certifications	CCSAus CSA 22-2 No 950-1 C-Tick CULus 508 TUV 60950-1
Environmental characteristic	EMC conforming to EN 50081-1 EMC conforming to EN 50082-2 EMC conforming to EN/IEC 61000-6-2 Safety conforming to EN/IEC 60950 Safety conforming to SELV
IP degree of protection	IP20 conforming to EN/IEC 60529
Ambient air temperature for storage	-25...70 °C
Relative humidity	0...95 % without condensation or dripping water
Class of protection against electric shock	Class I conforming to VDE 0106-1
Dielectric strength	3000 V between input and ground 3000 V between input and output 500 V between output and ground 500 V between outputs
RoHS EUR status	Compliant
RoHS EUR conformity date	0501

ABL8REM24030

Regulated Switch Mode Power Supply

Dimensions and Mounting

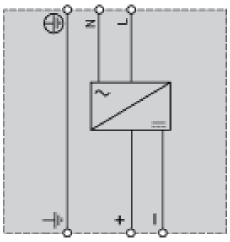
Mounting on a 35 mm/1.37 in. or 75 mm/2.95 in. Rail



ABL8REM24030

Regulated Switch Mode Power Supply

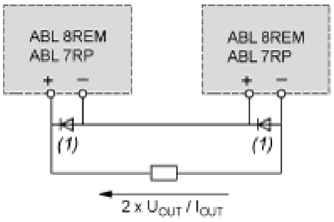
Internal Wiring Diagram



Regulated Switch Mode Power Supplies

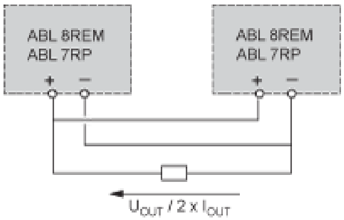
Series or Parallel Connection

Series Connection



(1) Two Shottky diodes Imin = power supply In and Vmin = 50 V

Parallel Connection



Family	Series	Parallel
ABL 8REM/7RP	2 products max.	2 products max.

Series or parallel connection is only recommended for products with identical references.

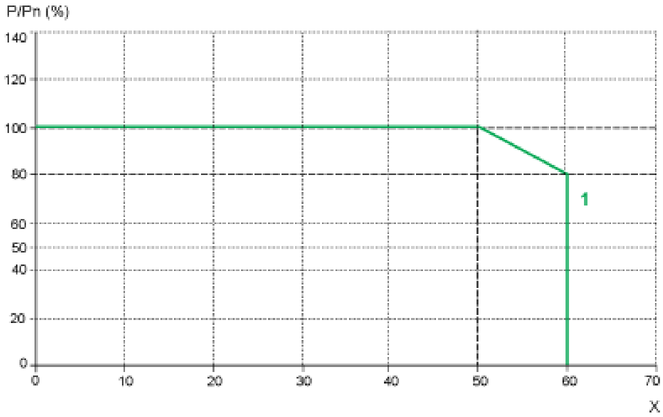
Regulated Switch Mode Power Supplies

Derating

The ambient temperature is a determining factor that limits the power an electronic power supply can deliver continuously. If the temperature around the electronic components is too high, their life will be significantly reduced.

The nominal ambient temperature for the Optimum range of Phaseo power supplies is 50 °C. Above this temperature, derating is necessary up to a maximum temperature of 60 °C.

The graph below shows the power as a percentage of the nominal power that the power supply can deliver continuously, depending on the ambient temperature.



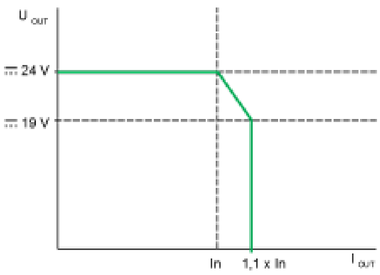
X Maximum operating temperature (°C)
(1) ABL 8REM, ABL 7RP mounted vertically

Derating should be considered in extreme operating conditions:

- Intensive operation (output current permanently close to the nominal current, combined with a high ambient temperature)
- Output voltage set above 24 Vdc (to compensate for line voltage drops, for example)
- Parallel connection to increase the total power

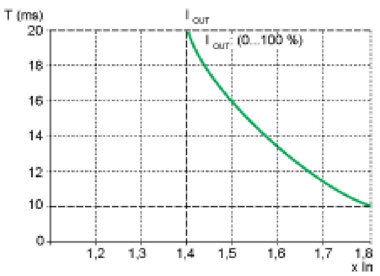
Regulated Switch Mode Power Supply

Load Limit



Regulated Switch Mode Power Supply

Temporary Overloads

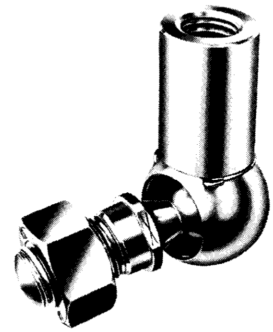


BALL & SOCKET JOINTS

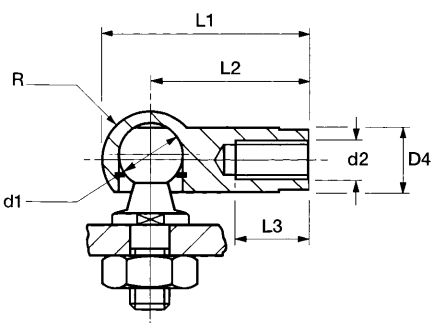
Manufactured to DIN 71802, these ball & socket joints feature induction hardened balls to resist wear. Security clips retain the threaded ball studs in their sockets and spanner flats are provided on the stud. Spanner flats can be provided on the sockets to order. Available in mild steel - zinc plated and clear passivated or in stainless steel, from stock.

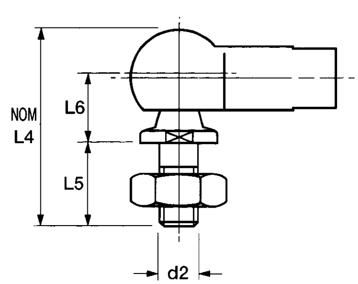
Maximum static push/pull values are valid for both radial and axial loads but do not apply to stainless steel versions.

Supplied with appropriate lock nut.

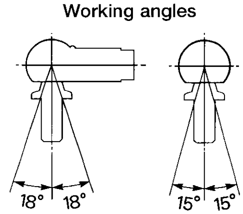


Order Code	Material	Thread	Size	Ball Ø d1	Thread d2	D4	L1	L2	L3	L4	L5	L6	R	Spanner flats A/F	Max static push/pull (kp)
373.05.C	Mild Steel	RH	5	8	M5	8	28.5	22	10.5	25.0	10.2	9	6.4	7	30
373.06.C	Mild Steel	RH	6	10	M6	10	32.5	25	11.5	30.0	12.5	11	7.5	8	70
373.08.C	Mild Steel	RH	8	13	M8	13	39.5	30	14.0	38.0	16.5	13	9.7	11	150
373.10.C	Mild Steel	RH	10	16	M10	16	47.0	35	15.5	47.5	20.0	16	12.0	13	200
373.12.C	Mild Steel	RH	12	16	M12	16	47.0	35	15.5	47.5	20.0	16	12.0	13	200
374.05.C	Mild Steel	LH	5	8	M5	8	28.5	22	10.5	25.0	10.2	9	6.4	7	30
374.06.C	Mild Steel	LH	6	10	M6	10	32.5	25	11.5	30.0	12.5	11	7.5	8	70
374.08.C	Mild Steel	LH	8	13	M8	13	39.5	30	14.0	38.0	16.5	13	9.7	11	150
374.10.C	Mild Steel	LH	10	16	M10	16	47.0	35	15.5	47.5	20.0	16	12.0	13	200
374.12.C	Mild Steel	LH	12	16	M12	16	47.0	35	15.5	47.5	20.0	16	12.0	13	200
373.05.C.S	Stainless Steel	RH	5	8	M5	8	28.5	22	10.5	25.0	10.2	9	6.4	–	–
373.06.C.S	Stainless Steel	RH	6	10	M6	10	32.5	25	11.5	30.0	12.5	11	7.5	–	–
373.08.C.S	Stainless Steel	RH	8	13	M8	13	39.5	30	14.0	38.0	16.5	13	9.7	–	–
373.10.C.S	Stainless Steel	RH	10	16	M10	16	47.0	35	15.5	47.5	20.0	16	12.0	–	–
373.12.C.S	Stainless Steel	RH	12	16	M12	16	47.0	35	15.5	47.5	20.0	16	12.0	–	–
374.05.C.S	Stainless Steel	LH	5	8	M5	8	28.5	22	10.5	25.0	10.2	9	6.4	–	–
374.06.C.S	Stainless Steel	LH	6	10	M6	10	32.5	25	11.5	30.0	12.5	11	7.5	–	–
374.08.C.S	Stainless Steel	LH	8	13	M8	13	39.5	30	14.0	38.0	16.5	13	9.7	–	–
374.10.C.S	Stainless Steel	LH	10	16	M10	16	47.0	35	15.5	47.5	20.0	16	12.0	–	–
374.12.C.S	Stainless Steel	LH	12	16	M12	16	47.0	35	15.5	47.5	20.0	16	12.0	–	–





Working angles



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